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## **Child sexual abuse revisited: A population-based cross-sectional study among Swiss adolescents**

Mohler-Kuo, Meichun ; Landolt, Markus A ; Maier, Thomas ; Meidert, Ursula ; Schönbucher, Verena ;  
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**Abstract:** Purpose: Child sexual abuse (CSA) is one of the most serious public health problems among children and adolescents, owing to its widespread prevalence and serious health consequences. The present study aimed to assess the prevalence of, and characteristics and circumstances associated with, CSA. Methods: An epidemiological survey was conducted on a nationally representative sample of 6,787 ninth-grade students ( $15.5 \pm .66$  years of age) in Switzerland. Self-reported computer-assisted questionnaires were administered between September 2009 and May 2010. Various forms of sexual victimization were assessed using the newly developed Child Sexual Abuse Questionnaire. Results: Overall, 40.2% and 17.2% of girls and boys, respectively, reported having experienced at least one type of CSA event. Lifetime prevalence rates were 35.1% and 14.9%, respectively, for CSA without physical contact, 14.9% and 4.8% for CSA with physical contact without penetration, and 2.5% and .6% for CSA with penetration among girls and boys. The most frequently experienced event was sexual harassment via the Internet. More than half of female victims and more than 70% of male victims reported having been abused by juvenile perpetrators. Depending on the specific event, only 44.4%–58.4% of female victims and 5.8%–38% of male victims disclosed CSA, mostly to peers. Conclusions: The present study confirms the widespread prevalence of CSA. The high prevalence of CSA via the Internet and the frequent reports of juvenile perpetrators suggest emerging trends in CSA. Low disclosure rates, especially among male victims, and reluctance to disclose events to family members and officials may impede timely intervention.

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Child sexual abuse revisited:

A population-based cross-sectional study among Swiss adolescents

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## Abstract

**Purpose:** Child sexual abuse (CSA) is one of the most serious public health problems among children and adolescents, due to its widespread prevalence and serious health consequences. The present study aimed to assess the prevalence of, and characteristics and circumstances associated with CSA.

**Methods:** An epidemiological survey was conducted on a nationally-representative sample of 6787 9<sup>th</sup> grade students ( $15.5 \pm 0.66$  years old) in Switzerland. Self-reported computer-assisted questionnaires were administered between September 2009 and May 2010. Various forms of sexual victimization were assessed using the newly-developed Child Sexual Abuse Questionnaire (CSAQ).

**Results:** Overall, 40.2% and 17.2% of girls and boys reported having experienced at least one type of CSA event, respectively. Lifetime prevalence rates were 35.1% and 14.9% for ‘CSA without physical contact’; 14.9% and 4.8% for ‘CSA with physical contact without penetration’; and 2.5% and 0.6% for ‘CSA with penetration’ among girls and boys, respectively. The most frequently-experienced event was ‘sexual harassment via the internet’. More than half of female victims and more than 70% of male victims reported having been abused by juvenile perpetrators. Depending on the specific event, only 44.4%-58.4% of female victims and 5.8%-38% of male victims disclosed CSA, mostly to peers.

**Conclusions:** The present study confirms the widespread prevalence of CSA. The high prevalence of CSA via the internet and the frequent reports of juvenile perpetrators suggest emerging trends in CSA. Low disclosure rates, especially among male victims, and reluctance to disclose events to family members and officials, may impede timely intervention.

**Keywords:** prevalence, child sexual abuse, adolescents, survey, epidemiology

**Abbreviations:** CSA: child sexual abuse; RAs: Research Assistants; CSAQ: *Child Sexual Abuse Questionnaire*

**Implications and Contributions (50 words)**

The prevalence of more severe forms of childhood sexual abuse (CSA) might be stable over time, but both ‘CSA without physical contact’ via the internet or text-messaging, and the number of juvenile perpetrators appear to have increased dramatically. These emerging trends warrant interventions at the family, school and government levels.

## INTRODUCTION

Child sexual abuse (CSA) is one of the most serious public health problems among children and adolescents owing to its widespread international prevalence [1–4] and well-documented negative health consequences [5–6]. In particular, previous studies have shown that both contact and non-contact CSA, is associated with increased risks of later mental and physical health problems and risk-taking behaviors [5–6].

Over the past 3 decades, the prevalence of CSA, as estimated in various epidemiological studies in different countries and populations, has varied considerably. In a recently published review of 39 studies in 21 countries, CSA prevalence ranged from 0% to 53% among females and 0% to 60% among males [2]. In another recently published global meta-analysis incorporating 65 articles from 22 countries, 19.7% of women and 7.9% of men had experienced CSA before age 18 years [3]. The wide range of CSA prevalence could be attributed to several methodological issues that include different definitions of CSA, measurement issues, and geographic and sample characteristics [1,2,4,10,11]. There is no consensus among researchers as to what defines CSA. Some use the age difference between the perpetrator and victim, whereas others set specific age cutoffs for victims [11–14]. Still others only consider abuse that involves actual physical contact, and others incorporate a broader range, from noncontact abuse through penetration [11]. Likewise, to date, no consensus CSA screening instrument exists. For example, some studies used multiple questions with behavior-specific experiences (e.g., “Has anyone ever placed his penis in your mouth against your will?”) instead of broad-labeling terms such as “rape” (e.g., “Have you ever been raped?”) [15–17] to minimize the rate of false-negative or false-positive results from respondents’ subjective perception or interpretation. Other methodological variations have included different numbers of questionnaire items [4,18], different contexts for questions asked [15], and different means of data collection [2,11]. Furthermore, the size, geographic

location, and demographic characteristics of the sample, as well as the sampling method, also could affect prevalence rates [3,4,11].

Despite Finkelhor's [1] call for additional comparative research of CSA internationally, the methodological problems of past CSA research continue to render such comparisons of CSA prevalence difficult [2–4]. To overcome this, CSA studies of large nationally representative samples and multiple behavior-specific questions are needed.

To date, there has been no estimate of CSA prevalence in a nationally representative sample in Switzerland, and no comprehensive nationwide data on the incidence of reported cases of CSA in Switzerland have been gathered. In 1994, Halpérin et al. [19] conducted an epidemiological study to assess the prevalence of CSA and characteristics associated with CSA in the Geneva area of Switzerland. The present study, with a similar sample and age group and types of questions, aimed to assess the prevalence of, and characteristics and circumstances associated with, CSA in a nationally representative sample of adolescents in Switzerland using a newly developed instrument consisting of multiple behavior-specific questions.

## METHODS

### *Participants*

The present epidemiological study on adolescent victimization included a nationally-representative sample of ninth-grade students in Switzerland. Participants were 13–20 ( $15.5 \pm 0.66$ ) years old in the 2009–2010 school year, with more than 97% of the sample between the ages of 14.0 and 16.9 years. Sampling was stratified according to the seven great regions and 26 cantons of Switzerland. In spring 2009, a sample of 10,092 students was drawn from 560 randomly selected classes and 228 schools using the most updated list from the Swiss Federal Bureau of Statistics. This list is 2 years behind, but includes all public schools (only 6% of Swiss children attend private schools). Students on that list who were in Grade 7 were

selected, so they would be in Grade 9 during the 2009–2010 school year. The sampling was stratified by the 26 cantons in Switzerland and probability proportional to size cluster sampling was used to select classes and schools, taking school size into consideration. Before data collection, the study had to be approved by every ethics committee and education department in all 26 cantons; all but one ethics committee and 22 education departments consented to participate, which resulted in the loss of 28 schools and 63 classes from the original sample. Additionally, 23 schools (48 classes) refused to participate after being contacted, school refusal primarily due to schedule conflicts with other previously-scheduled surveys. Altogether, 177 schools with 449 classes participated in the survey, with an estimated loss of 25–30% of the student sample (the exact number could not be calculated because changes in class size and number of students had occurred between the 2007–2008 and 2009–2010 school years). According to Swiss law, parental consent was not required for participation in this school survey owing to the age of the participants ( $\geq 14.0$  years).

Student absences on the day of the survey (537) and refusals (63) yielded 6,841 completed questionnaires. Of these, 15 questionnaires were lost due to computer-related problems and 39 were deemed invalid. Ultimately, 6,787 questionnaires were analyzed.

## **Procedures**

After we obtained approval from ethics committees and education departments, we sent a letter inviting selected schools to participate in the survey. If the school did not respond within 2 weeks, a follow-up phone call was made. Research assistants (RAs) were trained to conduct the survey from September 2009 to May 2010. All RAs were informed about confidentiality and data protection issues, and signed a confidentiality agreement. The survey was voluntary and anonymous, lasted roughly 60–75 minutes, and was conducted using a self-reported computer-assisted questionnaire on a laptop. The questionnaire included detailed information on sexual victimization, other forms of victimization, physical and mental health,

social and demographic characteristics, and potential CSA risk factors, and had been translated into all three official languages of Switzerland ( German, French and Italian ) using standard translation and back translation procedures. Two RAs were paired to bring laptops to the schools. Before the survey started, the RAs provided a short introduction to the study, and informed students of their rights to choose not to participate in the study and not to answer any question which they felt uncomfortable with. After the survey was completed, every student received a list of institutions that provide help and counseling services. More details of the study design and procedures have been reported elsewhere [21].

## Measures

Due to the lack of a widely accepted and validated measure to assess all types of CSA, we developed a new questionnaire, the *Child Sexual Abuse Questionnaire* (CSAQ), taking into consideration previous literature in the field [19,22]. The authors selected items for the CSAQ, which were reviewed by professionals working with sexually-abused children (e.g., clinicians, social workers, and police). In addition, all items were tested in a pilot study with 120 adolescents in a pilot study. The CSAQ contains 15 questions to assess various forms of CSA (see Appendix A, which is available in the online edition of this article). The first eight questions were categorized as “CSA without physical contact,” with yes/no response options; the remaining seven questions were categorized as “CSA with physical contact”, and had three response options (“No”, “Yes, someone tried but she/he did not succeed”, and “Yes, someone tried and succeed in doing so”). These last seven questions were further categorized into ‘physical contact with penetration’ and ‘physical contact without penetration’. The category “CSA with physical contact without penetration” included three main questions plus four questions in the category of “physical contact with penetration” when respondents replied that ‘Yes, someone tried but did not succeed’. If the respondent answered “yes” to any



of the 15 questions on CSA, follow-up questions were asked to assess the number of events that had occurred over the person's lifetime and over the past 12 months, their age at first occurrence, characteristics of the perpetrators, the location of each event; disclosure and treatment of the event, and so forth. Because of the potential for multiple events, all follow-up questions allowed for multiple responses.

Cronbach  $\alpha$  for all eight types of CSA without physical contact was .6. Cronbach  $\alpha$  for all types of CSA with physical contact was .7 for both girls (11 types) and boys (nine types). Notably, the applicability of internal consistency reliability has been questioned for measures that assess actual life events [23], because these events may not be closely related to each other. This may explain the moderate levels of internal consistency observed within the CSAQ scales.

### **Statistical Analysis**

Analyses were weighted using the STATA, version 12 ( College Station, TX) survey estimation procedure to reflect sampling design and reduce selection bias caused by non-participation. Differences in the prevalence of all CSA events between girls and boys were assessed by odds ratios. We also used odds ratios to assess the association between socio-demographic characteristics and three categories of CSA (CSA without physical contact, CSA with physical contact without penetration and CSA with penetration). Sociodemographic characteristics included nationality, gender, living arrangements, maternal and paternal education, and community size. We created a further variable called "parental education" by adding the two earlier responses. Adjusted OR and 95% CI were reported using multiple logistic regression models for each CSA type. Only covariates that were statistically-significant at  $p < .05$  by either by univariate or multiple regression, were included.

### **RESULTS**

*Prevalence of child sexual abuse*

Table 1 lists sociodemographic characteristics of the sample. Overall, 1,282 girls (40.2%) and 610 boys (17.2%) reported having experienced at least one of the 19 types of CSA. The lifetime prevalence of CSA was two to three times higher among girls than boys—both CSA without physical contact and CSA with physical contact, either with or without penetration. The lifetime prevalence of ‘CSA without physical contact’ was 35.1% among girls and 14.9% among boys; for CSA with physical contact without penetration, it was 14.9% among girls and 4.8% among boys; for CSA with penetration, it was 2.5% among girls and .6% among boys. The 12- month prevalence estimates of sexual abuse were not much lower than the lifetime estimates, with a similar sexual ratio indicating that most of these events that had occurred had also happened in the last 12 months (Table 2).

For behavior-specific questions, girls reported higher prevalence rates for all CSA events except “being forced to watch pornographic material” and “having forced anal intercourse”. Fourteen of these gender differences were statistically significant. The most frequently experienced events for both genders were “sexual harassment via the internet” (lifetime: 28.1% vs. 9.8%; 12-month: 18.7% vs. 8.0%), “being molested by someone verbally or by e-mail/short message service” (lifetime: 14.6% vs. 3.9%; 12-month: 9.7% vs. 2.6%), and “being kissed or touched against your will” (lifetime: 11.6% vs. 4.1%; 12-month: 7.5% vs. 2.9%).

*Characteristics of CSA*

Table 3 lists the characteristics of CSA. Roughly half of victims experienced CSA without physical contact and more than two thirds experienced CSA with physical contact after age 13 years. For CSA without physical contact and CSA with penetration, more than half of abused girls and more than three quarters of abused boys reported the perpetrator as someone under 18 years of age. About three quarters of abused girls and boys reported CSA with physical

contact without penetration perpetrated by someone under 18. Conversely, 28.5%–44.5% of female victims reported events perpetrated by an adult, versus 3.5%–20.8% of male victims.

The vast majority (96%–98%) of female victims reported that the CSA had been committed by a male perpetrator versus just 29.6% –50.9% of male victims. On the other hand, about 62.7%–80.8% of male victims reported that the CSA had been committed by a female perpetrator, versus just 1.9%–15.3% of female victims.

The most frequently reported perpetrators of CSA without physical contact were strangers and acquaintances, with <3% of victims reporting abuse from a family member. The most frequently reported perpetrators of CSA with physical contact without penetration were acquaintances and partners. The most frequently reported locations for CSA without physical contact were “at home” and within contexts such as the internet, mobile phones and e-mails. Among victims of CSA with physical contact without penetration, the most frequently reported locations were public places, whereas among victims of CSA with penetration, the most frequently reported locations were “at another house” by girls and “at home” by boys. Depending on the type of CSA, 44.4%–58.4% of girls disclosed the event to others, versus 5.8%–38.0% of boys. Victims most often disclosed the CSA event to their peers, and <20% disclosed the abuse to their family. Less than 10% of victims reported the CSA to the police.

#### *Sociodemographic factors associated with CSA*

On univariate logistic regression analysis, being female, not living with both biological parents, and having less-educated parents were associated with all three types of CSA (Table 4). Of the remaining variables – nationality, maternal education, paternal education, parental education, and community size – all also were associated with all three types of CSA, with two exceptions: nationality was not associated with CSA with penetration; and urban living was not associated with CSA with physical contact without penetration. In multiple logistic regression analysis, being female and not living with one’s biological parents were predictors

of all three forms of CSA. Being non-Swiss was associated with CSA without physical contact and CSA with physical contact without penetration; having less-educated parents was associated with both forms of CSA with contact; and living in an urban community was associated with CSA with penetration.

## Discussion

In a large, nationally-representative sample of Swiss ninth-graders, we found CSA to be alarmingly prevalent, reported by almost two in five girls and one in six boys. This said, the high prevalence of CSA should be interpreted within the context of our definition of CSA, because the most commonly reported form was CSA without physical contact, whereas CSA with penetration was least common, reported by only 2.5% of girls and 0.6% of boys. These findings are consistent with literature reports that CSA is two to four times more prevalent among girls [1,13,19]. Child sexual abuse without physical contact happened most frequently at home or in cyberspace, and perpetrators were most often strangers. Child sexual abuse with physical contact happened most frequently in a public place or a house other than the victim's, and most perpetrators were known to the victims. Surprisingly, one half to three quarters of victims reported that they had been molested by juveniles, and only 0% – 10.7% of victims reported family members as perpetrators, depending on the type of CSA and the victim's gender. Consistent with previous literature [13,19,24], predictors of CSA were being female, not living with both biological parents, and having parents with a lower education level or of non-Swiss nationality.

Our results can be compared with those of a previous Swiss study conducted in Geneva in 1995–1996 [19], in a similar age group using similar questions. In that study, the prevalence of CSA with physical contact was almost the same as ours, but the prevalence of CSA without physical contact was much lower. Our data suggest that the dramatic differences between the two studies primarily result from the high prevalence of sexual harassment via the internet

and by e-mail/text messaging, two types of CSA that were not assessed in the Geneva study. Our estimates are consistent with those identified in Finland in an analogous age group, in which 33% of children reported having received sexual text messages, photos or videos through the internet from someone clearly older [25]. Although the results of three U.S. Youth Internet Safety Surveys (2000, 2005 & 2010) of children ages 10–17 years demonstrated a decline in solicitation for sex and unwanted pornography exposure through the internet by 2010, increased internet-based sexual harassment was noted, especially among girls [26]. With the dramatically increased use of the internet and mobile phones among adolescents over the last decade, these forms of communication have overtaken television watching as the most common leisure-time activities among adolescents in Switzerland [27]. Our results highlight the urgent need to continue strengthening internet safety for children through more comprehensive internet monitoring measures, enhanced parental control, and increased school education.

The high prevalence of CSA found in our study could be partially attributed to the use of multiple behavior-specific questions. Previous studies have shown that using multiple behaviorally specific questions increases the endorsement rates of CSA versus using broad-labeling terms such as “abuse” [15–17,28], because victims might interpret the term “abuse” differently or want to avoid stigma associated with such a term [16]. The estimates we found are comparable to those of other studies in developed countries that used a broad definition of CSA among adolescents [2–4,29]. Prevalence rates are lower than those reported in Africa and higher than those identified in Asia [3,4]; however, variations in CSA rates across geographical areas either could reflect true differences in incidence or could be affected by how disclosure and reporting of CSA cases are experienced in different cultures. The present study also revealed substantially more juvenile perpetrators relative to the Geneva study conducted 15 years ago. Among male victims, the rate of juvenile perpetrators was 72.5% for CSA without physical contact, compared with 48.1% in the Geneva study; and the rate of

juvenile perpetrators for CSA with physical contact (with or without penetration) among male victims was almost 78.1%, versus just 27.8% in the Geneva study. A similar pattern was identified among female victims: 57.5% for CSA without physical contact compared with 22% in the Geneva study, and 72.2% for CSA with physical contact versus 39.6% in the Geneva study. Furthermore, most perpetrators of contact abuse were known to the victims, such as partners, peers, or acquaintances. This new trend toward juvenile perpetrators among peers and acquaintances might indicate increased violent behaviors among adolescents. These self-report results also differ considerably from official police reports, in which perpetrators most often are adult male relatives [30,31], which suggests significant underreporting of such abuse to officials.

We also found that only about half of victimized girls and less than one third of boys disclosed their CSA experiences, and that disclosure rates were even lower for more severe CSA. The rates of disclosure found in our study were especially low relative to previous population-based studies involving the same age group, including studies in Denmark (83%) [13], Sweden (81% in girls and 69% in boys) [29], and Geneva (74% in girls and 51% in boys) [19]. Our low disclosure rates could indicate a decrease in disclosures among adolescents over time. Consistent with previous studies [29,32], we found that adolescents tended to disclose their CSA experiences to peers rather than to their parents or police and other professionals. A recent qualitative study confirmed this pattern and found that CSA victims were reluctant to disclose CSA to their parents, owing to lack of trust or the concern of burdening them [33]. This reluctance to disclose could impede timely psychosocial interventions for victims. Given these low rates of disclosure to parents, officials, and other professionals, solely trusting police or proxy reports or professional informants could gravely underestimate the magnitude of CSA as a public health problem. It is also important for professionals, especially within school systems, to provide information on sexual abuse during sex education, and to provide support systems easily accessed by victimized children.

Two strengths of the present study are its large, nationally representative sample of adolescents and newly developed, multiple, behavior-specific items, which covered all possible types of CSA in the absence of well-established CSA measures. Using multiple behavior-specific questions to measure sexual victimization has long been advocated [15,17,28]. In particular, the highly prevalent noncontact CSA in adolescents identified in our study mainly via the Internet and mobile phones was not assessed in most prior studies on CSA.

Because our survey instrument asked about so many different types of CSA, comparisons of CSA prevalence can be made with other studies, irrespective of how narrow or broad a definition those studies used, merely by extracting from our data whatever types of CSA those other studies incorporated. Thus, the present study contributes greatly to estimating CSA prevalence and provides sound data for international comparisons. The results also should be generalizable to other similarly developed countries, especially in Europe.

Ethical concerns have been expressed about conducting research on sensitive topics in young people. Therefore, we undertook several precautions to address ethical concerns in the current study. First, the protocol was approved by the ethical committees and education departments of all participating cantons. Second, the survey was completely anonymous and computer-assisted self-administered questionnaires were used. As shown by previous studies [34,35], such an approach strengthens respondents' perception of privacy and guarantees confidentiality. Third, the RAs were instructed to keep a close eye on students to detect any signs of stress or discomfort early on. In two cases, data collection was terminated owing to symptoms of distress. Fourth, after completing the questionnaire, the students received an information sheet with a list of easily accessible institutions that provide help for victims of trauma. Because of the limited capacity of the research team to provide counseling services to study participants, we provided a complete list of services where children could access

counseling and any other assistance they needed. The teachers also were invited to contact us if they had any concerns or questions after the survey.

The current study also had certain limitations. Although we achieved a high response rate in classrooms (92%), with only .8% of students refusing to answer questions and 7.2% absent on the day of the survey, we cannot rule out the possibility that a disproportionate number of refusals and absences involved students with CSA experiences. However, we believe this bias was minimal, given the high prevalence and patterns of CSA we identified. Other sources of bias could be related to respondents' misinterpreting questions, or just making fun of the survey. To address this, we used a computer-assisted questionnaire to increase confidentiality and accuracy [13] and checked data for internal and external consistency, which resulted in 39 questionnaires being excluded. Another limitation relates to our inability to provide age-specific estimates, because of the diverse education system in Switzerland, including the age of beginning school and policies regarding skipping grades. Consequently, some cantons had significantly younger or older populations than average, and the age range was extremely broad for a ninth grade class. However, 97% of participants were under 17 years of age and all first CSA experiences happened before the age of 18 years, with 97% before age 16 years.

Emerging trends of increased CSA via the Internet or text messaging and the increased number of juvenile perpetrators of CSA warrant interventions at the family, school, and government levels. Teachers, school psychologists, and clinicians should be alerted to the increased prevalence of noncontact CSA and rising numbers of juvenile perpetrators. Because a considerable proportion of adolescents report having been sexually abused by their peers, and because rates of CSA disclosure are low, routine inquiries about victimization among peers of adolescents by clinicians and schoolteachers or psychologists may help adolescents to disclose CSA events.

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**Table 1: Sociodemographic characteristics of study participants  
(N=6,787)**

<b>Characteristics</b>	<b>N</b>	<b>weighted % (95 % confidence interval)</b>
Male	3551	52.1[50.9, 53.4]
Female	3236	47.9[46.6, 49.1]
<b>Age in years</b>		
Mean $\pm$ SD (range)	15.5 $\pm$ 0.66 (13-20)	
13-15	5254	76.9[74.5, 79.2]
>15	1526	23.1[20.8, 25.5]
<b>Nationality</b>		
Swiss	5026	73.9[70.8, 76.8]
Non-Swiss	1761	26.1[23.2, 29.2]
<b>Father's education</b>		
No vocational training	1476	22.3[20.7, 24.0]
Basic vocational training	2244	33.1[31.1, 34.9]
Qualification for university	512	7.5[ 6.9, 8.1]
Higher vocational training	913	13.3[12.3, 14.5]
University	591	8.6[ 7.4, 9.8]
Don't know or data missing	1051	15.2[14.1, 16.5]
<b>Mother's education</b>		
No vocational training	1772	26.8[24.7, 29.0]
Basic vocational training	2400	35.4[33.5, 37.4]
Qualification for university	695	9.8[ 8.8, 11.0]
Higher vocational training	479	6.9[ 6.1, 7.7]
University	386	5.4[ 4.7, 6.3]
Don't know of data missing	1055	15.7[14.5, 17.0]
<b>Living arrangements</b>		
With both biological parents	5210	77.1[75.7, 78.5]
Other	1577	22.9[21.5, 24.3]
<b>Type of community</b>		
Urban ( $\geq$ 50,000 residents)	4456	63.4[55.0, 71.0]
Rural (<50,000 residents)	2331	36.6[29.0, 45.0]

*Note: N varied slightly due to missing data*

**Table 2: Lifetime prevalence of child sexual abuse by gender and abuse type**

	Lifetime Prevalence					12 Month Prevalence				
	Girls (N=3219)		Boys ( N=3524)		Odds ratio <sup>1</sup> [95% CI]	Girls (N=3219)		Boys (N=3524)		Odds ratio <sup>1</sup> [95% CI]
	N	%	N	%		N	%	N	%	
<b>Any type of sexual abuse</b>	1282	40.2[37.9,42.6]	610	17.2 [15.7, 18.8]	3.2 [2.9, 3.7]**	867	27.1 [25.1, 29.2]	449	12.8 [11.6, 14.1]	2.5 [2.2,2.9]**
<b>CSA without physical contact</b>	1127	35.1[32.7,37.5 ]	530	14.9 [13.5, 16.3]	3.1 [2.7, 3.5]**	745	23.1[21.2, 25.2 ]	390	11.1 [10.0, 12.3]	2.4 [2.1,2.8]**
Forced to witness sexual exposure	123	3.7[3.0,4.5]	46	1.3 [0.9, 1.8]	3.0 [1.9, 4.7]**	50	1.6 [1.2, 2.1]	28	0.8 [0.5, 1.2]	2.1 [1.2,3.4]**
Forced to show naked body	91	2.7[2.1,3.4]	31	0.8 [0.6, 1.1]	3.4 [2.2, 5.2]**	42	1.3 [1.0, 1.7]	15	0.4 [0.2, 0.6]	3.3 [1.8,6.0]**
Forced to watch people having sex	49	1.5[1.1,2.0]	35	0.9 [0.6, 1.3]	1.6 [1.0, 2.7]	37	1.1 [0.8, 1.6]	24	0.7 [0.4, 1.0]	1.7 [0.9,3.1]
Forced to watch pornographic material	70	2.3[1.8,2.9]	89	2.4 [1.9, 3.1]	0.9 [0.7, 1.3]	37	1.1 [0.8, 1.6]	63	1.7 [1.3, 2.2]	0.7 [0.4,1.0]
Pictures taken of nude body against will	35	1.1[0.8,1.5]	30	0.8 [0.6, 1.1]	1.3 [0.8, 2.2]	20	0.6 [0.4, 0.9]	14	0.4 [0.2, 0.7]	1.6 [0.8,3.2]
Given intimate pictures against will	44	1.4[1.0,2.0]	21	0.6 [0.4, 0.9]	2.5 [1.5, 4.1]**	22	0.8 [0.5, 1.3]	11	0.3 [0.2, 0.6]	2.5 [1.2,5.1]*
Molested by someone verbally or by e-mail/SMS	469	14.6[13.2,16.1]	135	3.9 [3.3, 4.6]	4.2 [3.5, 5.1]**	309	9.7 [8.5,10.9]	92	2.6 [2.1, 3.1]	4.0 [3.3,4.9]**
Sexual harassment via the internet	891	28.1[25.9,30.4]	343	9.8 [8.6, 11.2]	3.6 [3.1, 4.2]**	599	18.7 [16.9, 20.7]	276	8.0 [6.9, 9.2]	2.6 [2.2,3.1]**
<b>CSA with physical contact without penetration</b>	472	14.9[13.3,16.7]	170	4.8 [4.0, 5.8]	3.5 [2.8, 4.3]**	302	9.6 [8.5, 10.9]	118	3.3 [2.7, 4.1]	3.1 [2.4,4.0]**
Kissed or touched against will	365	11.6[10.2,13.2]	144	4.1 [3.4, 5.0]	3.1 [2.4, 3.9]**	231	7.5 [6.6, 8.5]	103	2.9 [2.4, 3.6]	2.7 [2.1,3.5]**
Forced to kiss someone	101	3.0[2.5,3.7]	47	1.4 [1.0, 1.9]	2.2 [1.5, 3.1]**	57	1.8 [1.3, 2.4]	29	0.9 [0.6, 1.3]	2.1 [1.3,3.3]**
Forced into prostitution	10	0.4[0.2,0.7]	7	0.2 [0.1, 0.4]	1.8[0.7, 4.9]	7	0.3 [0.1, 0.5]	5	0.1 [0.06, 0.3]	1.7 [0.5,5.8]
Forced penetration with finger or object, someone tried but did not succeed	60	1.9[1.4,2.5]	11	0.3 [0.2, 0.6]	6.2 [2.9, 13.1]	42	1.3 [1.0, 1.8]	5	0.1 [0.05, 0.3]	10.9 [4.4,27.1]**
Forced vaginal intercourse (females only), someone tried but did not succeed	42	1.3[0.9,1.9]	----	NA	NA	22	0.7 [0.4, 1.2]	----	NA	NA
Forced anal intercourse, someone tried but did not succeed	20	0.6[0.4,1.0]	11	0.3 [0.2, 0.6]	2.1 [1.0, 4.7]*	15	0.5 [0.3, 0.9]	5	0.1 [0.05, 0.4]	3.6 [1.2,11.4]*
Forced oral intercourse, someone tried but did not succeed	42	1.3[1.0,1.8]	6	0.2 [0.1, 0.4]	7.9 [3.3, 18.9]**	31	1.0 [0.7, 1.4]	3	0.1 [0.02, 0.3]	11.7 [3.6,38.5]**
<b>CSA with penetration</b>	86	2.5[2.0,3.0]	21	0.6 [0.4, 0.9]	4.3 [2.6, 7.2]**	52	1.5 [1.1, 2.0]	17	0.5 [0.3, 0.8]	3.2 [1.8,5.7]**
Forced penetration with finger or object	44	1.2[0.9,1.6]	12	0.3 [0.2, 0.7]	3.6 [1.8, 7.4]**	28	0.8 [0.5, 1.1]	10	0.3 [0.1, 0.6]	2.8 [1.2,6.1]*
Forced vaginal intercourse (females only)	25	0.8[0.6,1.2]	----	NA	NA	13	0.4 [0.2, 0.8]	----	NA	NA
Forced anal intercourse	4	0.1[0.03,0.3]	6	0.2 [0.1, 0.4]	0.6 [0.2, 2.3]	1	0.03 [0.005,0.2]	6	0.2 [0.1, 0.4]	0.2 [0.02,1.7]
Forced oral intercourse	31	0.8[0.6,1.2]	8	0.2 [0.1, 0.5]	3.5 [1.7, 7.3]**	18	0.5 [0.3, 0.8]	5	0.1 [0.1, 0.4]	3.4 [1.2,9.4]*

NA= not applicable .

a: Odds Ratio was reported using boys as the reference group;

\*:  $P < 0.05$ , \*\*:  $P < 0.01$

**Table 3: Characteristics of children experiencing child sexual abuse**

	CSA without physical contact		CSA with physical contact without penetration		CSA with penetration	
	Girls (N=1127)	Boys (N=530)	Girls (N=472)	Boys (N=170)	Girls (N=86)	Boys (N=21)
<b>Age when CSA first occurred</b>						
<7	2.8 [1.8, 4.5]	4.1 [ 2.7, 6.2]	3.3 [1.7, 6.6]	2.4 [0.9, 6.0]	1.0 [0.1, 6.9]	NA
7-11	8.5 [6.9, 10.3]	11.2 [ 8.4, 14.7]	9.5 [6.9, 12.8]	10.6 [6.7, 16.4]	16.7 [9.4, 28.0]	7.3 [1.7, 26.4]
12-13	34.6 [31.6, 37.6]	30.0 [26.2, 34.1]	21.0 [17.3, 25.2]	18.4 [12.6, 26.1]	12.6 [ 7.0, 21.6]	28.1 [9.6, 58.8]
>13	54.2[51.0, 57.4]	54.7 [50.3, 59.1]	66.2 [61.8, 70.4]	68.6 [60.6, 75.5]	69.7 [57.1, 79.8]	64.7 [36.0, 85.6]
<b>Age of the perpetrator</b>						
<18	57.5 [54.6, 60.4]	72.5 [68.4, 76.2]	72.6 [67.1, 77.6]	77.9 [71.8, 83.1]	55.7 [43.8, 67.0]	81.8 [60.1, 93.1]
18 or older	44.5 [41.1, 48.1]	20.8 [16.8, 25.4]	28.5 [24.5, 32.9]	10.3 [5.9, 17.2]	42.1 [31.9, 53.0]	3.5 [0.5, 22.2]
<b>Sex of the perpetrator</b>						
Male	96.3 [95.0, 97.3]	40.7 [36.0, 45.5]	97.1 [95.0, 98.4]	29.6[22.1, 38.3]	98.0 [92.4, 99.5]	50.9 [25.9,75.4]
Female	15.3 [13.1, 17.7]	72.9 [68.5, 77.0]	4.7 [3.1, 7.0]	80.8[73.2,86.7]	1.9 [0.5, 6.7]	62.7 [40.8, 80.4]
<b>Relationship with perpetrator</b>						
Family member	2.7 [1.9, 3.8]	2.3 [1.3, 3.9]	7.0 [4.6 10.5]	2.0 [0.8, 5.2]	10.7 [5.7, 19.1]	0
Boyfriend or girlfriend	13.2 [11.4, 15.2]	30.3 [26.4, 34.5]	34.8 [29.8, 40.2]	52.1 [44.4, 59.8]	35.7 [24.7, 48.5]	46.3 [26.1, 67.8]
Acquaintance	31.2 [28.6, 34.0]	38.0 [33.7, 42.5]	49.9 [45.4, 54.3]	35.7 [29.5, 42.4]	35.1 [25.0, 46.8]	20.8 [ 8.1, 43.8]
Stranger	75.1 [72.1, 77.8]	47.7 [42.9, 52.6]	14.4 [11.5, 17.8]	19.0 [13.3, 26.4]	7.8 [3.3, 17.6]	26.1 [13.7, 44.2]
<b>Place where the event(s) occurred</b>						
At home	43.2 [40.4, 46.0]	47.2 [42.4, 52.1]	20.4 [16.3, 25.2]	28.7 [21.7, 36.9]	23.2 [16.0, 32.5]	52.3 [28.9, 74.8]
At another house	9.6 [8.0, 11.5]	14.7 [11.1, 19.3]	22.7 [18.6, 27.4]	21.3 [15.4, 28.6]	37.7 [27.6, 48.9]	33.6 [15.8, 57.7]
Public place	13.1 [11.1, 15.4]	18.7 [15.3, 22.7]	35.1 [30.6, 40.0]	35.2 [27.3, 44.1]	15.9 [10.1, 24.2]	29.8 [13.5, 53.6]
School/on way to school	7.7 [6.2, 9.4]	10.9 [8.4, 13.9]	14.8 [11.6, 18.8]	19.2 [14.0, 25.9]	2.3[ 0.5, 9.1]	0
Other	41.1 [38.3, 43.9]	22.6 [19.1, 26.5]	11.9 [9.1, 15.5]	11.5 [ 7.7, 16.8]	7.3 [3.3, 15.6]	0
<b>Disclosure</b>						
Yes	58.4 [54.9, 61.9]	38.0 [33.6, 42.5]	56.3 [51.2, 61.3]	29.6 [23.2,37.0]	44.4[33.6,55.8]	5.8 [0.9, 30.2] <sup>1</sup>
<b>To whom was the event disclosed</b>						
Family member(s)	17.9 [15.4, 20.7]	12.1 [ 9.5, 15.5]	14.3 [11.5, 17.7]	11.0 [6.9, 17.0]	15.0 [9.1, 23.9]	0
Peer(s)	50.3 [47.1, 53.6]	30.0 [25.9, 34.4]	50.7 [45.6, 55.8]	24.3 [18.5,31.1]	33.8 [23.8, 45.4]	0
Teacher(s)	1.6 [1.0, 2.4]	2.2 [1.0, 5.0]	1.6 [0.8, 3.4]	0.4 [0.1, 2.9]	4.2 [1.0, 16.4]	0
Other(s)	2.9 [2.0, 4.2]	3.1 [1.9, 5.1]	3.6 [2.1, 6.3]	1.3 [0.3, 5.7]	1.8 [0.4, 7.2]	5.8 [0.9, 30.0]
<b>Was incident reported to the police</b>						
Yes	3.3 [2.5, 4.5]	3.5 [2.2, 5.4]	3.9 [2.6, 5.9]	4.8 [2.6, 8.7]	8.6[3.6, 19.0]	7.0[1.8, 23.5]

Percentages do not add up to 100% because multiple choices were allowed, considering multiple events. Because of ethical concerns, respondents could also choose not to answer any question. CSA= child sexual abuse; NA=not applicable 1: only one boy responded 'yes' but he did not want to reveal 'to whom the event was disclosed'.



**Table 4. Socio-demographic factors associated with child sexual abuse**

	CSA without physical contact (lifetime)		CSA with physical contact without penetration (lifetime)		CSA with penetration (lifetime)	
	Crude OR [95% CI]	Adjusted OR[95% CI]	Crude OR [95% CI]	Adjusted OR[95% CI]	Crude OR [95% CI]	Adjusted OR[95% CI]
<b>Nationality</b>						
Swiss	1.00	1.00	1.00	1.00	1.00	
Non-Swiss	1.37 [1.19, 1.59] **	1.29 [1.12, 1.49]**	2.08 [1.66, 2.59]**	1.85 [1.47, 2.33]**	1.36 [0.83, 2.24]	
<b>Gender</b>						
Male	1.00	1.00	1.00	1.00	1.00	1.00
Female	3.10 [2.71, 3.54] **	3.07 [2.68, 3.51]**	3.45 [2.75, 4.34]**	3.38 [2.68, 4.25]**	4.33 [2.59,7.22]**	4.15 [2.47,6.96]**
<b>Living arrangements</b>						
With both biological parents	1.00	1.00	1.00	1.00	1.00	1.00
Other	1.58 [1.40,1.79] **	1.58 [1.39,1.79]**	1.42 [1.18,1.70]**	1.44 [1.20,1.74]**	1.87 [1.21,2.9]**	1.80 [1.16, 2.81]**
<b>Education-mother</b>						
High or Middle	1.00		1.00		1.00	
Low	1.21 [1.04,1.39] *		1.79 [1.41,2.26]**		1.77 [1.08,2.90]*	
Don't know or data missing	0.88 [0.72,1.09]		0.99 [0.77,1.28]		1.06 [0.59,1.89]	
<b>Education-father</b>						
High or Middle	1.00		1.00		1.00	
Low	1.23 [1.06,1.43] **		1.91 [1.56,2.35]**		2.38 [1.47,3.85]**	
Don't know or data missing	1.04 [0.84,1.29]		1.36 [1.10,1.68]**		1.80 [1.03,3.14]*	
<b>Education-Parents</b>						
Other	1.00	1.00	1.00	1.00	1.00	1.00
Low	1.21 [1.07,1.38] **	1.12 [0.98,1.28]	1.78 [1.46,2.17]**	1.50 [1.22,1.85]**	2.15 [1.35,3.42]**	2.11 [1.32,3.37]**
<b>Place of Residence</b>						
Rural	1.00	1.00	1.00		1.00	1.00
City	1.24 [1.03,1.49]*	1.13 [0.93,1.37]	1.22 [0.95,1.57]		1.75 [1.10,2.78]*	1.62 [1.01,2.59] *

\*: P &lt;0.05, \*\*: P &lt;0.01

## Appendix A:

Child Sexual Abuse Questionnaire (CSAQ)		
1. Were you ever forced or pressured to look at the genitals of an adult or another kid?	0=No; 1=Yes	
2. Were you ever forced or pressured to undress yourself and/or show your genitals to an adult or another kid?	0=No; 1=Yes	
3. Were you ever forced or urged to watch one or several people masturbating or having sex?	0=No; 1=Yes	
4. Were you ever forced or urged to look at pornographic pictures, drawings, films, DVDs or magazines (also on cell phone)?	0=No; 1=Yes	
5. Did someone ever take pictures of your nude body against your will (with either a camera or cell phone)?	0=No; 1=Yes	
6. Did someone ever pass on intimate pictures of you to other people or publish them on the internet?	0=No; 1=Yes	
7. Were you ever molested by someone verbally or by e-mail/SMS?	0=No; 1=Yes	
8. Were you ever clearly sexually harassed or molested when you were chatting or during some other type of internet-based communication?	0=No; 1=Yes	
9. Were you ever touched or kissed with sexual intention on your body and/or your private parts?	0=No; 1=Yes, someone tried but she/he didn't succeed 2=Yes, someone tried and succeed in doing so	
10. Have you ever been forced or urged to touch or kiss another person on his/her body and/or his/her private parts?	0=No; 1=Yes, someone tried but she/he didn't succeed 2=Yes, someone tried and succeed in doing so	
11. Has anyone ever tried to insert his/her finger/s or an object into your vagina or your anus against your will?	0=No; 1=Yes, someone tried but she/he didn't succeed 2=Yes, someone tried and succeed in doing so	
12. (Only for females): Has anyone ever tried to have vaginal intercourse with you against your will?	0=No; 1=Yes, someone tried but she/he didn't succeed 2=Yes, someone tried and succeed in doing so	
13. Has anyone ever tried to have anal intercourse with you against your will?	0=No; 1=Yes, someone tried but she/he didn't succeed 2=Yes, someone tried and succeed in doing so	
14. Has anyone ever urged or forced you to take his penis or another person's penis into your mouth?	0=No; 1=Yes, someone tried but she/he didn't succeed 2=Yes, someone tried and succeed in doing so	
15. Were you ever forced or urged by another person to prostitute yourself (sex for money)?	0=No; 1=Yes, someone tried but she/he didn't succeed 2=Yes, someone tried and succeed in doing so	
Child sexual abuse without physical contact (eight items): if any of items 1–8 was answered with “Yes” (1); .CSA involving physical contact without penetration (seven items): if any of items 9, 10 or 15 was answered with “Yes” (1 or 2) or any of items 11–14 was answered with “Yes, someone has tried, but not succeeded”(1); CSA with penetration (four items): if any of items 11–14 was answered with “Yes, someone tried and succeeded in doing so” (2).		